

REMARKS

Reconsideration and allowance of this application, as amended, is respectfully requested.

This amendment is in response to the Office Action dated March 23, 2005. Appreciation is expressed for the allowance of claims 5-9 and the indication of allowable subject matter in claims 2-4. By the present Amendment, claim 1 has been amended for clarification with corresponding amendments being made to the dependent claims 2-4 to provide proper antecedent basis with regard to the amended language of claim 1.

Briefly, the present invention is directed to a improved arrangement for a semiconductor device to prevent degradation of its electrical properties, even in an environment where it is subject to frequent thermal shocks. For example, the high heat and variation and electric load in an environment such as vehicles can readily cause failure in semiconductor devices used in such environments, as discussed beginning of page 2 of the specification. One reason for such failure is the large difference in the linear expansion coefficients of the semiconductor chip of the device and the lead electrode. This difference in linear expansion coefficients places a large stress on the bonding member, such as a solder, which joins the chip to the lead electrode, (e.g., see the discussion on page 3, line 18 et seq.). This can significantly decrease the lifetime of the device.

Accordingly, the present invention provides an improved structure for the lead electrode to decrease the stress on the bonding member. Referring to the first embodiment of the invention shown in Figure 1 (solely for purposes of example), the chip 3 is joined to a case electrode 5 and a lead electrode 1 by a bonding member 2A. With regard to this, it can be seen that, in this embodiment, a thin region 1B

is provided internally of the thicker disk portion region 1C of the lead electrode located at the peripheral edge thereof. As discussed on page 12, lines 17 to page 13, line 10, by providing this arrangement, it is possible to significantly suppress stress on the bonding member 29.

Reconsideration and allowance of amended claim 1 over the 35 U.S.C. 102(b) rejection based on the Wasmer (U.S. Patent 5,005,069) reference is respectfully requested. By the present amendment, claim 1 has been amended to clarify the distinctions over Wasmer. Specifically, claim 1 has been amended to define that the lead electrode has an edge region (e.g., 1C of Figure 1A and 1B) and a thinner region formed internally of the edge region (e.g., the region 1B of Figures 1A and 1B). It is respectfully submitted that Wasmer completely lacks such an arrangement. On the contrary, as recognized in the Office Action, Wasmer provides a tapered structure. The tapered structure Wasmer is actually thinnest at the edge portion. Therefore, Wasmer's structure is exactly opposite the claimed feature of providing the thin portion internally of the thicker edge portion. Accordingly, reconsideration and allowance of the amended claim 1 and its dependent claims 2-4 is respectfully requested.

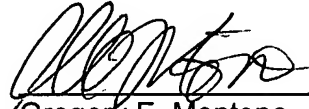
If the Examiner believes that there are matters which can be resolved by either by person or telephone interview, the Examiner's is invited to contact Applicant's undersigned attorney at the number indicated below.

Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry,

Stout & Kraus, LLP, Deposit Account No. 01-2135 (612.43361X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

A handwritten signature in black ink, appearing to read 'G. Montone', is written over a horizontal line.

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